

SECTION II

TABLE OF CONTENTS

II - CROPLAND INTERPRETATIONS

Introduction

Important Farmlands

 Prime Farmland List(s)

 Additional Farmland of Statewide Importance

 Unique Farmland List(s)

 Additional Farmland of Local Importance

Land Capability Classification

Crop Yield Estimates

Hydrologic Soil Groups

Vegetative Soil Groups

II. CROPLAND INTERPRETATIONS

INTRODUCTION

This subsection contains information and tables showing soils data that applies primarily to cropland, both irrigated and non-irrigated, and includes orchards and vineyards.

Important farmlands found in the area and agreed to by local and state conservation partners are presented by soil mapping unit in the Prime Farmland list, Unique Farmland list, additional farmland of statewide importance list and the additional farmland of local importance list. This information is used by planning agencies and to complete the farmland conversion import rating reports on federal programs that affect cropland conversion.

Land capability classification in Class I through VIII with capability subclasses e, w, s, or c has been assigned to each soil mapping unit in the area. Class I soils have little or no limitation when used for field crops. Class VIII soils are not suitable for crops and have major limitations. These are reported in published soil survey reports.

Crop yield estimates are provided for the major crops in the area for each suitable soil mapping unit. These are reported in published soil survey reports. Each soil mapping unit has been assigned to hydrologic soil group A, B, C, or D depending on the runoff potential at the end of a long storm and after prior wetting and opportunity for swelling.

Engineers use this information to assign Runoff Curve Numbers to parts of a watershed to predict runoff.

Vegetative Soil Groups A through J have been used to classify each soil mapping unit to determine which plants are most suited considering the limiting soil features. Planting recommendations presented in the Vegetative Guides are based in part on suitable Vegetative Soil Groups.

II. CROPLAND INTERPRETATIONS

IMPORTANT FARMLANDS

The following tables show soils in this area classified according to the important farmlands inventory as applied to the State of California.

The four categories are defined as:

PRIME FARMLANDS

Prime Farmland is land best suited for producing food, feed, forage, fiber and oilseed crops and also available for these uses (i.e. the land could be cropland, pastureland, rangeland, forest land, or other land but not urban built-up land or water). It has the soil quality, growing season and moisture supply needed to produce sustained high yields of crops economically when treated and managed, including water management, according to modern farming methods.

Prime Farmland meets all the following criteria:

1. The soils have:
 - A. Aquic, udic, ustic or xeric moisture regimes and an available water capacity of at least 4 inches (10 cm) per 40 to 60 inches (1 to 1.52 meters) of soil (this is a California definition) to produce the commonly grown cultivated crops (cultivated crops include, but are not limited to, grain, forage, fiber, oilseed, sugarbeets, vegetables, orchard, vineyard, and bush fruit crops) adapted to the region in 7 or more years out of 10; or
 - B. Xeric, ustic, aridic or torric moisture regimes in which the available water capacity is at least 4 inches (10 cm) per 40 to 60 inches (1 to 1.52 meters) of soil and the area has a developed irrigation water supply that is dependable (a dependable water supply is one in which enough water is available for irrigation in 8 out of 10 years for the crops commonly grown) and of adequate quality; and,
2. The soils have a temperature regime that is frigid, mesic, thermic or hyperthermic (peregelic and cryic regimes are excluded). These are soils that, at a depth of 20 inches (50 cm), have a mean annual temperature higher than 32° F (0° C). In addition, the mean summer temperature at this depth in soils with an O horizon is higher than 47° F (8° C); in soils that have no O horizon, the mean summer temperature is higher than 59° F (15° C); and,
3. The soils have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches (1 meter); and,

4. The soils either have no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow cultivated crops common to the area to be grown; and,
5. The soils can be managed so that, in all horizons within a depth of 40 inches (1 meter), during part of each year the conductivity of the saturation extract is less than 4 mmhos/cm and the exchangeable sodium percentage (ESP) is less than 15; and,
6. The soils are not flooded frequently during the growing season (less often than once in 2 years); and,
7. The product of K (erodibility factor) x percent slope is less than 2.0; and,
8. The soils have a permeability rate of at least 0.06 inch (0.15 cm) per hour in the upper 20 inches (50 cm) and the mean annual soil temperature at a depth of 20 inches (50 cm) is less than 59° F (15° C); the permeability rate is not a limiting factor if the mean annual soil temperature is 59° F (15° C) or higher; and,
9. Less than 10 percent of the surface layer (upper 6 inches (15 cm)) in these soils consists of rock fragments coarser than 3 inches (7.6 cm); and,
10. The soils have a minimum rooting depth of 40 inches (1 meter). This is a California definition, not a national one.

ADDITIONAL FARMLAND OF STATEWIDE IMPORTANCE

Farmland of Statewide Importance is land other than Prime Farmland that has a good combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops and is available for these uses (the land could be cropland, pastureland, rangeland, forest land or other land, but not urban land or water).

Farmland of Statewide Importance meets all the following criteria:

1. The soils have:
 - A. Aquic, udic, ustic or xeric moisture regimes and an average available water capacity of at least 3.5 inches (8.8 cm) within a depth of 60 inches (1.52 meters), or in the root zone (root zone is the part of the soil that is penetrated by plant roots) if the root zone is less than 60 inches deep to produce the commonly grown cultivated crops (cultivated crops include, but are not limited to, grain, forage, fiber, oilseed, sugarbeets, vegetables, orchard, vineyard and bush fruit crops) adapted to the region in 7 or more years out of 10; or
 - B. Xeric, ustic, aridic or torric moisture regimes in which the available water capacity is at least 3.5 inches (8.8 cm) within a depth of 60 inches (1.52 meters) deep and the area has developed irrigation water supply that is dependable (a dependable water supply is one in which enough water is available for irrigation in 8 out of 10 years for the crops commonly grown) and of adequate quality; and,

2. The soils have a soil temperature regime that is frigid, mesic, thermic or hyperthermic (pergelic and cryic regimes are excluded). These are soils that at a depth of 20 inches (50 cm) have a mean annual temperature higher than 32° F (0° C). In addition, the mean summer temperature at this depth in soils with an O horizon is higher than 47° F (8° C); in soils that have no O horizon, the mean summer temperature is higher than 59° F (15° C); and,
3. The soils have a pH between 4.5 and 9.0 in all horizons within a depth of 40 inches (1 meter), or in the root zone if the root zone is less than 40 inches deep; and,
4. The soils either have no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow cultivated crops common to the area to be grown; and,
5. The soils can be managed so that, in all horizons within a depth of 40 inches (1 meter), or in the root zone, if the root zone is less than 40 inches deep, during part of each year the conductivity of the saturation extract is less than 16 mmhos/cm and the exchangeable sodium percentage (ESP) is less than 25; and,
6. The soils are not flooded frequently during the growing season (less often than once in 2 years); and,
7. The product of K (erodibility factor) x percent slope is less than 3.0; and,
8. Less than 10 percent of the surface layer (upper 6 inches (15 cm)) in these soils consists of rock fragments coarser than 3 inches (7.5 cm).

UNIQUE FARMLAND

Unique Farmland is land other than Prime and Additional Farmland of Statewide Importance, that is currently used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season and moisture supply needed to produce sustained high quality and/or high yields of a specific crop when treated and managed according to modern farming methods. Examples of such crops are citrus, olives, avocados, fruit and vegetables.

Characteristics of unique farmland:

- (a) It is used for a specific high value food or fiber crop; and
- (b) It has a moisture supply that is adequate for the specific crop; the supply is from stored moisture, precipitation, or a developed irrigation system; and
- (c) It combines favorable factors of soil quality, growing season, temperature, humidity, air, drainage, elevation, aspect, or other conditions, such as nearness to market, that favor the growth of a specific food or fiber crop.

These lands are currently producing the following crops of high economic importance to California as identified in the annual report of the Department of Food and Agriculture:

Fruit Orchard Crops

Apples	Olives
Apricots	Peaches
Avocados	Pears
Cherries	Persimmons
Citrus	Plums
Dates	Pomegranates
Figs	Prunes
Nectarines	

Vegetable Crops

Artichokes	Cucumber
Asparagus	Garlic
Beans	Lettuce
(Dry & Snap)	
Broccoli	Onions
Brussels	Peas
Sprouts	Peppers
Cabbage	Potatoes
Carrots	Spinach
Cauliflower	Sweet Potatoes
Celery	Tomatoes

Tree Nuts

Almonds
Walnuts
Pistachio

Vineyard and Caneberries

Bushberries
Grapes
Kiwi Fruit

Irrigated Field Crops

Alfalfa	Rice
Barley	Safflower
Corn	Sorghum
Cotton	Sugarbeets
Oats	Wheat

Specialties (not elsewhere classified)

Cut Flowers
Hops
Ladino Clover Seed
Nursery Products
Strawberries

ADDITIONAL FARMLAND OF LOCAL IMPORTANCE

In some local areas there is concern for certain additional farmlands for the production of food, feed, fiber, forage and oilseed crops, even though these lands are not identified as having national or statewide importance. These lands are to be identified by a local committee made up of concerned agencies, and called together by the NRCS District Conservationist designated as county representative. The local committee will review the lands under this category on at least a five-year basis.

II. CROPLAND INTERPRETATIONS

LAND CAPABILITY CLASSIFICATION

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The groups are made according to the limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; it does not take into consideration possible but unlikely major reclamation projects; and it does not apply to rice, horticultural crops, or other crops requiring special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for range, forest trees, or engineering.

In the capability system, all kinds of soils are grouped at three levels - the capability class, subclass, and unit. These are discussed in the following paragraphs.

Capability Classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use, defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife.

Class VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife.

Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife.

Class VIII soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, or water supply, or to aesthetic purpose.

Capability Subclasses are soil groups within one class; they are designated by adding a small letter, e, w, s, or c, to the class numeral, for example, IIe. The letter **e** shows that the main limitation is a risk of erosion unless close-growing plant cover is maintained; **w** shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be

partly corrected by artificial drainage); **s** shows that the soils is limited mainly because it is shallow, droughty, or stony; and **c**, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by **w**, **s**, and **c**, because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, range, woodland, wildlife, or recreation.

II. CROPLAND INTERPRETATIONS

CROP YIELD ESTIMATES

Yield estimates given in Table 2 “Estimated Average Yields per acre of Principal Crops” in published soil survey reports are based on information about the soils that was furnished by farmers and local technicians, from observations made by the soil scientists who surveyed the Area, from Natural Resources Conservation Service agronomists, crop specialists and technicians, and on suggestions furnished by Cooperative Extension farm advisors and the County Agricultural Commissioner. If little or no information about yields was available for a given soil, or if a specific crop is not grown on a given soil, estimates were not made.

The yields of the principal crops grown on arable soils in the Area are estimated for a high level of management and are given in Table 2. High-level management is defined as that management that will give the maximum return.

Several important factors should be taken into account when referring to the estimates in Table 2. First, the figures are estimates, or predictions; second, the figures are the expected averages over a period of years, and in any given year, yield can be considerably more or less than average; and third, a considerable variation exists among some soils, and this was considered in making the estimates.

Also important to keep in mind is the fact that new advances and developments in such areas as crop breeding, control of insects and diseases, and the use of fertilizer, tillage, irrigation, and drainage are constantly being made. The latest information can be readily obtained from Cooperative Extension farm advisors.

Estimates of yields are most useful when the management practices under which such yields can be produced are specified. Soils used for cultivated crops need management that maintains or improves their fertility, keeps them in good tilth, and helps control erosion. Yield estimates can also be provided to clients as part of their conservation plan, as they look at various alternatives and make conservation and management decisions. This soils report will be specific for the soils in the conservation management unit and for crops selected by the client.

II. CROPLAND INTERPRETATIONS

HYDROLOGIC SOIL GROUPS

Hydrologic soil groups are used for estimating the runoff potential of soils. Groupings are based on potential runoff at the end of a long storm and after prior wetting and opportunity for swelling. The absence of a protective vegetative cover is assumed. Four groupings are used: A, B, C, and D. Group A has the least runoff and highest infiltration potential, and Group D has the highest runoff and lowest infiltration potential. Groups B and C are intermediate.

Soils have been classified into four hydrologic soil groups according to their infiltration and transmission rates. This data is used by engineers to estimate runoff.

Hydrologic Soil Group A

- A. (Low runoff potential). Soils having high infiltration rates even when thoroughly wetted. These consist chiefly of deep, well to excessively drained sands or gravels. These soils have a high rate of water transmission in that water readily passes through them.

Hydrologic Soil Group B

- B. Soils having moderate infiltration rates when thoroughly wetted. These consist chiefly of moderately well to well-drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission

Hydrologic Soil Group C

- C. Soils having slow infiltration rates when thoroughly wetted. These consist chiefly of soils with a layer that impedes downward movement of water or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.

Hydrologic Soil Group D

- D. (High runoff potential). Soils having very slow infiltration rates when thoroughly wetted. These consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

Runoff Curve Numbers

The runoff curve number indicates runoff potential and is a number assigned to various hydrologic soil-cover complexes. A hydrologic soil-cover complex is a combination of hydrologic soil group (A, B, C or D) and land treatment, use, or cover.

Table 6, "Interpretations of Soil Properties Significant in Engineering," in published soil survey reports gives the hydrologic soil group for each soil mapping unit. This value can also be found on the soils data for conservation planning table for each soil survey and are located in the SOILS LEGENDS subsection.

II. CROPLAND INTERPRETATIONS

VEGETATIVE SOIL GROUPS

These are groups of soils having similar properties and qualities from the standpoint of plant adaptation and use. This grouping is used chiefly for determining the plants most suited to conservation practices and production of forage plants when the major limiting soil feature or problem is known. Irrigation and such climatic factors as precipitation, maximum and minimum temperatures, and length of growing season are separate factors not covered here. The major soil features which determine plant adaptation and permissible range within each vegetative soil group are described below. The underlined words indicate the key factor for each group.

- A. ALL CLIMATICALLY ADAPTED PLANTS SUITED. Soils are deep to very deep, moderately coarse to medium textured, moderately well to well-drained, moderately rapidly to moderately slowly permeable. (Soils in this group can have slight wetness and slight salinity or alkalinity.)
- B. Choice of plants limited by DROUTHINESS AND LOW FERTILITY LEVEL. Soils are coarse to gravelly medium textured, excessively drained, with less than five inches of available water capacity (AWC) in the root zone.
- C. Choice of plants limited by FINE TEXTURES. Soils are deep to very deep, moderately fine to fine-textured, moderately well-drained, moderately slowly to slowly permeable.
- D. Choice of plants limited by VERY SLOWLY PERMEABLE (CLAYPAN) SUBSOILS. Soils are moderately well-drained, with slow or very slow subsoil permeability.
- E. Choice of plants limited by WETNESS. Soils are somewhat poorly to very poorly drained. (Drained soil phases will be placed in appropriate group according to their current drainage status.) Slight salinity and/or alkalinity may be present.
- F. Choice of plants limited by SALINITY OR ALKALINITY. Soils are moderately to strongly saline alkaline, and usually somewhat poorly or poorly drained.
- G. Choice of plants limited by DEPTH. Soils are shallow to moderately deep, well-drained, over hardpan, bedrock or other unfractured dense material.
- H. Choice of plants limited by LOW pH. Soils are strongly to extremely acidic; pH is less than 5.6.
- I. Choice of plants limited by TOXIC PROPERTIES. Soils are usually moderately to strongly serpentinic.

- J. Choice of plants depends upon ON-SITE INVESTIGATION. Soils include those in the miscellaneous non-arable category, such as river wash, stony or rocky upland.

TABLE: Grouping Soils for Vegetative Purposes - California

FOOTNOTES:

All terms are standard. For definitions see NRCS TN-Soils-9 (rev.), March 1967, or Agr. Handbook No. 18, USDA-NRCS. Criteria underlined are main soil feature determining vegetative group.

1/ Subsoil permeability refers to permeability of the B horizon(s) or the 10- to 40-inch control section in soils without B horizons.

2/ Drainage class refers to drainage of soils that do not have altered drainage. If the soils have been drained, use class that most nearly reflects growing conditions following drainage improvement.

3/ Use current levels of salinity and alkalinity that are present in the field. Levels may be higher or lower than indicated on maps. Capability unit designations may be based on general assumptions that do not uniformly reflect current, short-term growing conditions on each parcel of land.

4/ Generally applies to the soil to a depth of 20 inches.

5/ Limits are for total available water-holding capacity for that part of the soil profile generally available to roots or to a depth of 60 inches if no severe intervening restrictions of soil or water are present. Refer to California Soil Handbook, Chapter 3, section 3.423.

6/ Soils in this group must have a clay increase of at least 15 percent, absolute, within 1 inch, or an abrupt or very abrupt AB boundary.

7/ Depth to unfractured rock or hardpan. If a claypan over 6 inches thick is present over rock or hardpan, place in Group D. See note 6 for other claypan criteria.

8/ Includes all soils not suitable for routine cultivation, seeding, and planting. Includes all class VII and VIII land, very cobbly soils, soils in class 3, 4, and 5 rockiness, class 2, 3, 4, and 5 stoniness. These soils require on-site recommendations.